

Appl. No. 10/045,897
Amdt dated September 13, 2006
Reply to Office Action of July 13, 2006

Atty. Ref. 81800.0176
Customer No. 26021

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A relay server comprising:

communicating means for communicating with a plurality of network devices using TCP/IP connections that are established and held in response to authenticated login demands from the plurality of network devices, and for communicating with a different relay server; and

connection information holding means for holding connection information of the plurality of network devices capable of communicating by the communicating means;

wherein TCP/IP connections are authenticated by comparing the login demand with the connection information stored in the connection information holding means, and

wherein the communicating means refers to the connection information based on a connection demand from one of the plurality of network devices having a held TCP/IP connection with the relay server, and relays communication via the different relay server to another one of the plurality of network devices having a held TCP/IP connection with the different relay server.

2. (Previously presented) The relay server according to claim 1 wherein the communicating means receives the connection information the different relay server holds and stores the connection information in the connection information holding means.

3. (Currently amended) A communication system comprising:

a plurality of network devices; and

a plurality of relay servers connected to the plurality of network devices by a network,

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wherein one of the plurality of network devices logs into and establishes an authenticated held TCP/IP connection with one of the plurality of relay servers and carries out communication by performing a connection demand with another one of the plurality of network devices that has logged into and established an authenticated held TCP/IP connection with another of the plurality of relay servers,

wherein TCP/IP connections are authenticated by comparing the login demand with connection information, and

wherein the one relay server relays the communication with the other network device via at least one other relay server of the plurality of relay servers based on the connection demand from the one network device.

4. (Previously presented) The communication system according to claim 3 wherein each of the plurality of relay servers obtains connection information of each of the plurality of network devices, each of the plurality of network devices is connected to and capable of communicating with each of the plurality of relay servers, and each of the plurality of relay servers decides which relay server communication is relayed.

5. (Currently amended) A relay server comprising:
communicating means for communicating with a plurality of network devices using TCP/IP connections that are established and held in response to authenticated login demands from the plurality of network devices, and for communicating with a different relay server; and

connection information holding means for holding connection information of the network devices which are capable of communicating,

wherein TCP/IP connections are authenticated by comparing the login demand with the connection information stored in the connection information holding means, and

wherein the communicating means renews the connection information based on a demand from one of the plurality of network devices, and notifies the renewed

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connection information to the different relay server based on renewal of the connection information.

6. (Currently amended) A relay server comprising:
communicating means for communicating with a plurality of network devices using TCP/IP connections that are established and held in response to authenticated login demands from the plurality of network devices, and for communicating with a different relay server; and

connection information holding means for holding connection information of the plurality of network devices which are capable of communicating,

wherein TCP/IP connections are authenticated by comparing the login demand with the connection information stored in the connection information holding means, and

wherein the communicating means renews the connection information within the connection information holding means based on renewal notification of connection information from the different relay server.

7. (Currently amended) A communication system comprising:

a plurality of network devices; and

a plurality of relay servers connected to the plurality of network devices by a network,

wherein one of the plurality of network devices logs into and establishes an authenticated held TCP/IP connection with one of the plurality of relay servers and carries out communication by performing a connection demand with another one of the plurality of network devices that has logged into and established an authenticated held TCP/IP connection with another of the plurality of relay servers,

wherein TCP/IP connections are authenticated by comparing the login demand with connection information, and

wherein the one relay server holds the connection information of the plurality of network devices which are capable of communicating, renews the connection information based on the connection demand, notifies the renewed connection

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information to different relay servers of the plurality of relay servers, and renews the connection information based on renewal notification of connection information transmitted from the different relay servers.

8. (Currently amended) A communication system comprising:

a plurality of network devices; and
a plurality of relay servers connected to the plurality of network devices by a network,

a data base server for holding connection information of the plurality of network devices and providing the connection information to the plurality of relay servers,

wherein one of the plurality of network devices logs into and establishes an authenticated held TCP/IP connection with one of the plurality of relay servers, and carries out communication by performing a connection demand with another one of the plurality of network devices that has logged into and established an authenticated held TCP/IP connection with another of the plurality of relay servers, wherein TCP/IP connections are authenticated by comparing the login demand with the connection information, and

wherein the one relay server renews the connection information based on the connection demand from the one network device, the one relay server causes the data base server to hold the renewed connection information.

9. (Currently amended) A facsimile system comprising:

a facsimile machine connected to an inner network;
a gateway device for connecting the inner network to an outer network; and
a plurality of facsimile relay servers connected to the outer network,

wherein the facsimile machine logs in and establishes a held TCP/IP connection with one of the plurality of facsimile relay servers in advance via the gateway device, and then transmits or receives an image over the held connection, and

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the one facsimile relay server relays communication or the image between the gateway device and another facsimile machine in another inner network that has logged into and established a held TCP/IP connection with another facsimile relay server by carrying out the communication with one or a plurality of the gateway devices and one or a plurality of different facsimile relay servers.

10. (Previously presented) The facsimile system according to claim 9 wherein the one relay server manages the facsimile machine to be connected thereto in accordance with identifying information specific to the facsimile machine.

11. (Previously presented) The facsimile system according to claim 9 wherein a plurality of facsimile machines within the inner network and another inner network can be connected to the one relay server via the gateway device and the another gateway device, and the one relay server manages each of the plurality of facsimile machines to be connected thereto in accordance with identifying information specific to each of the plurality of facsimile machines.

12. (Currently amended) A method for communicating between a plurality of network devices and a plurality of relay servers comprising:

establishing and holding an authenticated TCP/IP connection between each of a plurality of network devices and a plurality of relay servers at the initiative of the network devices;

authenticating the TCP/IP connection by comparing a login demand with connection information; and

relaying a communication between one of the plurality network devices and another one of the plurality of network devices by one of the plurality of relay servers via an authenticated held TCP/IP connection between the one network device and the one relay server, at least one other relay server of the plurality of relay servers, and an authenticated held TCP/IP connection between another relay server and the another network device based on a connection demand to the another network device from the one network device.

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13. (Previously presented) The communication method according to claim 12 further comprising obtaining connection information of the plurality of network devices established with the communication path to each of the plurality of relay servers, and deciding which of the other relay servers communication is relayed.

14. (Previously presented) The communication method according to claim 12, further comprising holding the connection information of the plurality of network devices established with the communication path and notifying the connection information to the another relay server, and renewing the connection information based on the notification from the another relay server.

15. (Currently amended) A method for a relay server to communicate between a plurality of network devices and a plurality of relay servers comprising:

establishing and holding an authenticated TCP/IP connection with one of the plurality of network devices based on a connection demand from the one of the plurality of the network devices;

authenticating the TCP/IP connection by comparing the connection demand with connection information; and

relaying the communication between the one of the plurality of network devices and another one of the plurality network devices via an authenticated held TCP/IP connection between the one network device and the relay server, at least one other relay server of the plurality of relay servers, and an authenticated held TCP/IP connection between another relay server and the another network device based on the connection demand to the another network device from the one network device.

16. (Previously presented) The communication method according to claim 15 further comprising:

obtaining the connection information of the plurality of network devices established with the communication path to the another relay server, and

deciding which of the plurality of relay servers to relay.

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17. (Previously presented) The communication method according to claim 15, comprising:

holding the connection information of the plurality of network devices established with the communication path;

notifying the connection information the another relay server; and

renewing the connection information based on the notification from the another relay server.

18. (Currently amended) A relay server comprising:

a communicating device communicating with a plurality of network devices using TCP/IP connections that are established and held in response to authenticated login demands from the plurality of network devices, and for communicating with a different relay server; and

a connection information holding device holding connection information of the plurality of network devices capable of communicating by the communicating device;

wherein TCP/IP connections are authenticated by comparing the login demand with the connection information stored in the connection information holding device, and

wherein the communicating device refers to the connection information based on a connection demand from one of the plurality of network devices having a held TCP/IP connection with the relay server, and relays communication via the different relay server to another one of the plurality of network devices having a held TCP/IP connection with the different relay server.

19. (Previously presented) The relay server according to claim 18 wherein the communicating device receives the connection information the different relay server holds and stores the connection information in the connection information holding device.

20. (Previously presented) The relay server according to claim 18 wherein each of the plurality of relay servers obtains connection information of each of the

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plurality of network devices, each of the plurality of network devices is connected to and capable of communicating with the each of the plurality of relay servers, and each of the plurality of relay servers decides which relay server communication is relayed.

21. (New) A relay server as claimed in claim 1, wherein the connection information includes user identification, password and renewal date.